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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,152	04/19/2004	Takuya Tsukagoshi	890050.481	2674

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EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/827,152

Applicant(s)

TSUKAGOSHI, TAKUYA

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/16/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remark

- This Office Action is in response to applicant's response filed on January 16, 2007, which has been entered into file.
- The applicant has filed no amendment to this application.
- Claims 1, and 3-7 remain pending in this application.

Response to Amendment

1. The amendment filed **August 14, 2007** is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

The newly submitted claim 7, (amendment filed on August 14, 2006) recites that "*the first optical path of the signal beam and the second optical path of the servo beam are oblique*" that are not supported by the specification.

Applicant is required to cancel the new matter in the reply to this Office Action.

Applicant fails to response to this rejection in the remark. The specification fails to provide EXPLICIT teachings for such feature.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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3. **Claim 7 is rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The reasons for rejections based on the newly added matters are set forth in the paragraph above.

4. **Claims 1, and 3-7 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification and the claims **fail** to teach why the diffraction (235) as shown in Figure 2 is capable of making the servo beam and the signal beam that incident on the diffraction grating in the SAME optical path and SAME incidence angle to be deflected differently. This generally will not happen for an ordinary diffraction grating. The specification and the claims fail to teach what **essential feature** will make this happen which make the claimed feature concerning the optical path of the signal beam and the optical path of the servo beam being different from each other non-enable by the disclosure.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1, 3, 4 and 6 and newly added claim 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent application publication of Horimai (US 2003/0063342 A1) in view of the patent issued to Amble et al (PN. 6,738,322).**

Horimai teaches an apparatus and method for *holographically recording optical information* wherein the apparatus is comprised of a *holographic recording medium* (1, Figure 1) having a *holographic recording layer* (3) and a *servo layer* (4), wherein the servo layer has regions in which *address servo area* (6) having a plurality of embossed servo pits, that serves as the *servo projection structures* for modulating a servo beam (please see paragraph [0136]), are formed. Horimai teaches that the *holographic information* is recorded by projecting a *signal beam*, (such as 51L Figure 7) via a *spatial light modulator* (18) for imparting signal information, and a *reference beam* (such as 51R), and the holographic recording is a recording of the *phase information* of the interfering signal and reference beams. The retrieve of the recorded holographic information is by projecting only the reference beam to the holographic recording medium to reproduce the holographic information. Horimai further teaches that an *objective lens* (12, Figure 1) is used to focus the signal beam on the holographic recording layer (3). The signal beam and the reference beam are being projected to the holographic recording medium via *projection optics* including *prism blocks* (15 and 19) and the *objective lens*. The optical paths of the signal beam and reference are also implicated set up by the projection optics. Horimai et al also teaches that a *servo beam* can also be projected via *projection optics* such as the prism blocks (15 and 19) and via the objective lens to the *specific locations* of the address servo areas (6) to retrieve the servo signal. It is implicitly true that since the address servo areas (6) are **only** located at certain positions of the servo layer the beam path for the servo beam and the beam path for the signal or reference beam are either implicitly *different* or would have been obvious to one skilled in the art to specifically make it different by *moving the objective lens* via the *actuator* (13, Figure 1) so that the retrieving of the servo information and the retrieving of the recorded holographic information will not be interfering each other to reduce the possible

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reading noise, (please see paragraphs [0123] to [0136])). **Claims 1, 3 and 6 have been amended** that the optical path for the signal beam and the optical path for the servo beam are different. This feature is implicitly included by the structure of Horimai since Horimai teaches that the servo pits or the servo projection structures (6, Figure 1) essentially are located at different locations from the hologram recording layer (3) which means that in order for the servo beam to reach the servo projection structures and for the signal beam to reach the hologram recording layer, they have to follow different optical path. With regard to claim 7, it is implicitly true that the actuator will be able to make the servo beam and signal beam to be at oblique angle.

With regard to the feature that the holographic recording beams and the servo beam are being generated by two light sources of different wavelength, recited in claim 1, 3 and 6, Horimai et al does not teach such explicitly. Amble et al in the same field of endeavor teaches an optical data storage system with focus and tracking errors wherein the holographic recording beams and the servo beam are generated by two light sources wherein the holographic data are recorded with wavelength of 532 nm and the servo beam is generated by light source (26, Figure 1) with wavelength 780 nm to avoid the cross talk and unwanted interference between the holographic recording and retrieving beams and the servo signal detecting beam. Amble et al also teaches explicitly that the signal beam in the holographic recording and the servo beam for detecting servo projection structures are of different optical paths, (please see Figure 3C and 3E).

With regard to claim 4, these references do not teach explicitly that the incident angles for the signal beam and the servo beam at the object lens are different from each other. However in order for the servo beam and the signal beam to reach servo projection structures and the hologram recording layer located at different locations, such features will be implicitly include in order for the beams to be send to different locations via the objective lens.

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7. **Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Horimai in view of the patent issued to Amble et al as applied to claim 3 above, and further in view of the patent issued to Matsui (PN. 5,784,353).**

The apparatus and method for holographic data storage taught by **Horimai** in combination with the teachings of **Amble et al** as described for claim 3 above have met all the limitations of the claim. Horimai et al teaches that actuator (13) could be used to move the objective lens (120 for regulating the beam optical paths. However it does not teach explicitly to include a diffraction grating as a deflecting means for deflecting the servo beam to the desired location. However diffraction grating is known in the art has as light beam deflection means for the essential diffraction property of the incident light. **Matsui** in the same field of endeavor also teaches an apparatus for initializing optical disk including detecting servo signal from the optical disk wherein a servo beam is projected by the projection optics including *diffraction gratings* (103 and 104) as deflecting means and the dichroic mirror (106) for projecting the servo beam to the recording medium. It would have been obvious to one skilled in the art to apply the teachings of Matsui to include diffraction gratings as beam deflection means in the servo beam projection optics of Horimai for the benefit of making the servo beam reaches desired locations and for efficiently retrieving the servo signal.

8. **Claims 1, 3-4 and 6 and newly added claim 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Amble et al (PN. 6,738,322).**

Amble et al teaches an *optical data storage system and method* with focus and tracking error correction wherein the system comprises a *holographic recording medium* having a *recording medium* (20, Figures 1 and 2 or 90 in Figure 3A to 3E or 128 in Figures 5A to 5D, 140 in Figures 6A to 6D), for recording a holographic data including phase information of light by projecting a *signal beam* and a *reference beam* (100A and 100B), emitted by a *first light source* of 532 nm wavelength. The holographic

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recording medium further comprises a *servo layers* (94, Figures 3A to 3E, 120 Figures 4A to 4D, 132 Figures 5A to 5D, 144 Figures 6A to 6D) that is located at opposite side of the recording layer as viewed in a direction of signal beam incidence on the holographic recording pattern. The holographic recording medium within the recording layer has holographic data recorded therein and the servo layer has *servo pattern* or grooves served as the *servo projection structures* formed within. Amble et al teaches that the system includes a *second light source* (26, Figures 1 and 2) having wavelength of 780 nm for generating *the servo beam* passing through an objective lens (14) to reach the servo pattern via a servo beam optical path. The signal beam is directed to the recording layer along a signal beam optical path as shown in Figures 3C, 4B, 5B, and 6B.

Claims 1, 3 and 6 have been amended to include the feature that the optical path for the signal beam and optical path for the servo beam are different. Amble et al teaches such explicitly as demonstrated by Figure 3C and Figure 3E. With regard to newly added claim 7, the optical paths are oblique to each other.

This reference has met all the limitations of the claims with the exception that it does not teach *explicitly* that the signal beam is directed to regions of the servo layer where the servo pattern is not formed. However since the holographic data is recorded in the recording layer and the servo patterns are formed in the servo layer and the since different light beams are used to record and retrieve holographic data and to detect the servo patterns, it would have been obvious to one skilled in the art to make the signal beam not to projected to the regions of the servo patterns to make the holographic data recorded at different general locations as compared to the servo pattern to avoid interference between the retrieving of holographic data and detection of the servo patterns.

With regard to claim 4, this reference does not teach explicitly that the incident angles for the signal beam and the servo beam are different when incident on an objective lens, however since the

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optical paths for the signal beam and servo beam are different from each other, such feature will have to be implicitly included if there is an objective lens used to direct both the signal beam and the servo beam.

Terminal Disclaimer

9. The terminal disclaimer filed on January 16, 2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of co-pending application 10/800,607 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Response to Arguments

10. Applicant's arguments filed on January 16, 2007 have been fully considered but they are not persuasive.

In response to applicant's argument concerning the 35 USC 112, first paragraph rejection, the applicant is respectfully noted that there is no where in the claims suggest that the deflection is based on different wavelengths. In fact, the deflection means is only in the path of the servo light beam, it seems to have nothing to do with the signal beam, wavelengths do not seem to be the factor.

In response to applicant's arguments concerning the cited Horimai reference does not teach the signal beam and the servo beam have different wavelength and a diffraction grating is placed in the optics of Horimai the optical paths of the signal, reference and servo beam must be the same, the examiner respectfully disagrees for the reasons stated below. Firstly, being one skilled in the art the applicant must understand the diffraction properties of a diffraction grating is based on the wavelength as well as the incident angle of the light beams on the diffraction grating, this means the optical paths for them will not be the same, since the angle of incident could be different. Secondly, the feature concerning using light sources of different wavelength is met by the disclosure of cited reference **Amble**. The feature therefore should be discussed based on the combination of Horimai and Amble references not separately.

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In response to applicant's arguments concerning Amble reference, the applicant has correctly identified that the hologram is recorded by beams 100A and 100B, (please see page 11 of the remark), and beam 102 is not the signal beam. The signal beam is 100A. The servo beam is 104, (please see Figures 4A to 4D), which explicitly shown that the servo beam (104) and the signal beam (100A) are of different wavelength and are following different optical paths. Since the recording of the format hologram and the reading of servo mark are using different light sources and following different optical paths, they certainly can be taking place at the same time.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

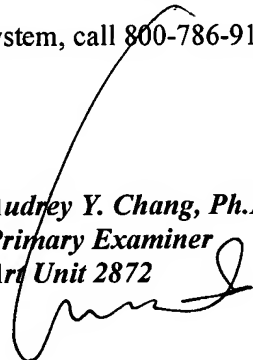
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Audrey Y. Chang, Ph.D.
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.